OHIO AGRICULTURAL

Experiment Station,

BULLETIN NO. 6.---SECOND SERIES,

SEPTEMBER, 1888.

EXPERIMENTS WITH WHEAT.

I. Comparative Test of Varieties.
II. Thick and Thin Seeding.
III. Early and Late Seeding.
IV. Seeding at Different Depths.
V. Methods of Seeding.

OFFICES AND EXPERIMENT GROUNDS
ON THE FARM OF THE OHIO STATE UNIVERSITY,
COLUMBUS, OHIO.

COLUMBUS, O.:
GAZETTE PRINTING HOUSE.
1888.

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BULLETIN NO. 6. SECOND SERIES.

AGRICULTURAL DEPARTMENT.

According to past reports from the Station the crop of wheat just harvested is the sixth successive crop from the same ground. In the following pages the plans will be found to be substantially the same as for the past years.

I. COMPARATIVE TEST OF VARIETIES.

The soil of the south field, which is used for experimental work in wheat, is largely made up of a clay loam and is naturally productive. The plats are one thirty-second of an acre in size, extending north and south, and are one drill width wide, or eight feet including spaces dividing of two feet. During the eight years that this field has been used for wheat growing it has had a top dressing of yard manure each alternate year, namely 1881, 1883, 1885 and 1887, at the rate of twelve tons to the acre. It will be observed therefore that the crop of 1888 has had the advantage of the last of these top dressings.

The ground was plowed to a depth of eight inches between the 1st and 15th of August; it was rolled immediately after plowing, then harrowed with a Kalamazoo or Spring-toothed harrow. The season being dry it was necessary to harrow the ground some eight or nine times, it was thus placed in fine condition to receive the seed, which was sowed with a Buckeye drill at the rate of about five pecks to the acre. Plats from one to thirty-three inclusive were sowed September 24th. From thirty-four to forty-nine, inclusive, were drilled September 27th, while the remainder of the varieties, on account of being received late, were not drilled in until October 4th and 7th. By turning to the table of results upon early and late seeding it will be readily seen that

the results from the plats sowed September 23d to October 4th, inclusive, show a variation of but two bushels to the acre, and show a slight advantage in favor of the later seeding. Plats 1 to 9 cannot be justly compared with the other varieties because of their being peculiarily favored by being sheltered by a fence and shade trees. It is altogether probable that No. 1 would have given a yield equal to Nos. 2 and 3 but for the fact of its being nearest the fence and was therefore largely destroyed by those pestiferous birds, the English Sparrows. A point here that may be worthy of mention is that these birds, like many others, are inclined to take the grain first from such points as give them the advantages of a hiding place—in this case they could hide in the trees which border along the fence. This was so plainly marked in this case as to make it possible that No. 1 would have yielded as much as Nos. 2 and 3, but for the depredations of these birds, which were confined almost wholly to No. 1. This explanation will account for the small amount of grain in No. 1 in proportion to the amount of straw. As will be observed No. 1 produced the largest yield of straw of any of the sixty-three varieties, while the amount of grain threshed was reduced almost to the minimum. The time of ripening of the several varieties was not as widely marked this season as in past years—there being only about seven days between the ripening of the first until the latest kinds were ready for the reaper. This we attribute to the peculiar weather, which prevailed not only here but largely throughout the State, during the wheat maturing season. The conditions were extremely warm weather, moderately dry, followed by heavy rains and high temperature. The influence of these conditions was to render wheat which was comparatively green fit for the sickle inside of four and five days. The sudden, or as it might almost be termed, the unnatural ripening caused the wheat to shrivel, which accounts largely, as we believe, for the variation in weights of measured bushels. It will be observed that only one variety, "Wyandotte Red," reached standard weight, while the "Royal Australian" fell ten pounds below. The Hungarian wheat gave the largest yield, and was followed closely by "German Emperor," "Theiss," "Early Rice" and others. The Hungarian has given an average for five years of almost thirty-eight bushels to the acre. As its name indicates it was imported from Hungary. It shows a large head, bearded white chaff and red kernel, but has the fault of being weak strawed and also of being smutty. A few notes taken from our field note book will explain some of the light yields, as well as furnish some salient points. Notes taken April 24, 1888—

No. 7—Winter killed, 20 per cent.
No. 10—Winter killed, 10 per cent. Did not germinate, 5 per cent
No. 14—Winter killed, about 50 per cent. A slight wash.
No. 17—Winter killed, about 5 per cent. Did not germinate, 20 per cent
No. 20—Winter killed, about 32 per cent. Did not germinate, 10 per cent
No. 24—Winter killed, about 12 per cent
No. 25—Winter killed, about 10 per cent.
No. 26—Winter killed, about 10 per cent. Did not germinate, 10 per cent.
No 27—Winter killed, about 05 per cent. Did not germinate, 25 per cent.
No. 30—Winter killed, about 10 per cent. Did not germinate, 20 per cent.
No. 33—Winter killed, about 15 per cent. Did not germinate, 10 per cent
No. 54 *A*—Germination incomplete, about 8 per cent. winter killed.

Other valuable matter can be gleaned from Tables I and II on varieties.

Where the plat number is followed by a letter it simply indicates that the plat is less than the thirty-second of an acre in size.

TABLE I—COMPARATIVE YIELD OF VARIETIES OF WHEAT.

		Yield of grain per acre.	Weight of measured bushels.	Straw, per acre.	Straw, per 100 pounds—Grain.	Date of ripening.	Color of grain.	Bearded, smooth.
1.	Geneva	19.7	59.5	4856	410.1	July 5	Red	B.
2.	Bearded King	34.1	59.0	4672	228.1	" 6	"	B.
3.	Diehl Mediteranean	34.1	59.0	4064	198.4	" 10	"	B.
4.	Wyandotte Red	29.9	60.5	3488	193.9	" 3	"	S.
5.	Egyptian	32.2	59.0	3392	175.2	" 6	"	B.
6.	Finley	22.9	57.0	2496	181.3	" 3	"	S.
7.	Extra Early Oakley	16.5	57.0	1824	185.4	" 3	"	S.
8.	Hicks	27.6	59.0	3040	187.1	" 3	"	S.
9.	Deitz	22 8	58.0	2048	149.7	" 5	"	B.
10.	Rocky Mountain	19.7	58.0	2336	197.3	" 3	"	S.
11.	Martin's Amber	28.2	58.0	2464	145.6	" 7	White	S.
12.	Nigger	32.0	57.0	2784	145.0	" 5	Red	B.
13.	Democrat	25.0	56.0	2784	185.1	" 7	White	B.
14.	McQuay	14.7	56.0	1632	185.4	" 9	Red	S.
15.	Mediteranean	28.2	57.0	2880	169.8	" 3	"	B.
16.	Tasmanian Red	25.0	55.5	3104	206.3	" 7	"	B.
17.	Miller's Prolific	16.0	56.0	1728	180.0	" 9	White	S.
18.	Theiss	36.8	58.0	3264	147.8	" 9	Red	B.
19.	Hungarian	41.6	58.0	4736	189.7	" 3	"	B.
20.	Golden Prolific	14.6	56.0	1504	170.9	" 10	White	B.
21.	Fulcaster	22 1	56.5	1728	130.1	" 9	Red	B.
22.	Red Fultz	30.9	54 0	3520	189.6	" 7	"	S.
23.	Landreth	25.6	53.0	2432	158.3	" 10	"	S.
24.	Patagonian Trigo	14.9	54.0	1824	203.5	" 7	"	S.
25.	Royal Australian	18.1	50.5	2112	194.1	" 7	White	S.
26.	Poole	17.5	54.0	1696	160.6	" 7	Red	S.
27.	Surprise	13.1	52.0	1600	202.5	" 7	White	S.
28.	Silver Chaff, smooth	31.4	54.5	3104	164.4	" 7	"	S.
29.	Tuscan Island	33.0	56.5	2560	129.1	" 6	Red	B.
30.	Jennings	15.0	53.0	1952	204.8	" 9	White	B.
31.	Valley	33.6	57.0	3424	164.8	" 7	Red	B.
32.	High Grade	20.2	54.0	2432	200.0	" 9	"	S.

33. Early Rice	21.8	55.5	2368	180.4	July 7	Red	S.
34. Farquhar	32.3	52 5	2774	143.3	" 7	"	S.
35. Red Brazilian	26.6	53.0	2816	176.0	" 10	"	S.
36. Red Line	27.7	55.5	1856	111.5	" 7	"	S.
37. New Monarch	27.2	55.5	3232	198.0	" 7	"	S.
38. Silver Chaff, bearded	37.3	58.5	3392	151.4	" 7	"	S.
39. Witter	26.8	54.0	2880	179.1	" 7	"	S.
40. French Prairie	39.4	58.0	2752	116.3	" 9	"	S.
41. German Emperor	40.0	57.0	3488	145.3	" 7	"	S.
42. Raub's Black Prolific	36.2	58.0	2176	114.7	" 7	"	S.
43. Early Rice	36.8	57.0	2848	128.9	" 7	"	S.
44. J. M. Allan	33.6	58.0	2976	147.6	" 7	"	S.
45. No name	24.0	56.0	2400	166.6	" 7	"	S.
46. Ontario Wonder	25.6	57.5	1628	106.6	" 10	"	S.
47. Sheriff	25.0	55.5	2336	155.3	" 4	"	S.
48. Four Rowed Sheriff	21.3	53.0	2816	220.0	" 7	"	S.
49. W. F. Morningstar	33.6	57.5	2784	138.1	" 7	White	B.
50 *A.* Missouri Blue Stem	28.2	56.0	4452	262.5	" 9	Red	S.
50 *B.* Oregon	24.4	56.0	2756	178.9	" 7	"	S.
50 *C.* Big English	30.1	58.0	3616	200.0	" 6	"	S.
50 *D.* Hybrid Mediteranean	35.1	56.0	2112	100.0	" 7	"	B.
51 *A.* Sibley's New Golden	37.7	58.0	1914	84.1	" 6	"	B.
51 *B.* Michigan Amber	34.4	58.0	2236	108.3	" 7	"	S.
51 *C.* Longberry	26.3	58.0	3616	228.5	" 9	"	B.
52 *A.* Reliable	28.5	56.0	3249	190 0	" 9	"	B.
52 *B.* Velvet Chaff	26.6	58.0	2368	148 0	" 6	"	B.
53 *A.* Odessa Red	22.3	56.0	2496	111.4	" 10	"	B.
53 *B.* Fultz	23.1	56.0	1679	121.0	" 7	"	S.
54 *A.* Red Russian	19.1	56.0	2288	200.0	" 10	"	S.
54 *B.* Gypsy	20.9	58.0	2294	174.4	" 9	"	B.
53. Seneca Chief	33.0	58.0	3200	161.2	" 7	"	B.

EXPOSURE OF PLOTS.—From Plat No. 8 to 33, inclusive, the exposure was about the same, but from 1 to 9, inclusive, the plats were protected by a fence and some trees.

TABLE II—COMPARATIVE YIELD OF VARIETIES OF WHEAT FOR EIGHT YEARS.

No. of plat.	Variety.	Yield per acre—bushels.								No. of years under trial.	Average yield in bushels.
		1880.	1881.	1882.	1883.	1884.	1886.	1887.	1888.		
1	Bearded King						35.1	25 3	34.1	3	31.5
2	Big English								30.1	1	30.1
3	Diehl Mediteranean					39.2	42.7	26.9	34.1	4	35.7
4	Deitz						58.7	25.4	22.8	3	35 6
5	Democrat				45.5	35.9	40.4	24.5	25 0	5	34.2
6	Egyptian		22.0	27.0	44.3	30.6	41.7	28.0	32.2	7	32.2
7	Extra Early Oakly						36.0	26.0	16 5	3	26.1
8	Early Rice			27.	40.3	39.5	34.7	25.2	21.8	6	31.4
9	Finley			22.5	46.3	30.1	40.2	27.0	22.9	6	31.5
10	Fulcaster								20.3	22.1	2	21.2
11	French Prairie								33 5	39 4	2	36.4
12	Four Rowed Sheriff									21.3	1	21 3
13	Fultz	27.0	21.5	19.5		36.7	38.4			23.1	6	27.7
14	Farquhar								36.6	32.3	2	34.4
15	Geneva									19.7	1	19.7
16	Golden Prolific						46.2	22.3	14.6	3	27.7
17	German Emperor								20.0	40.0	2	30.0
18	Gypsy									20.9	1	20.9
19	Hicks						38.5	26.5	27 6	3	30.8
20	Hungarian		21.0	28.5			50.1	37.4	41.6	5	35.7
21	High Grade							29.1		20.2	2	24.6
22	Hybrid Mediteranean									35.1	1	35.1
23	Jennings								28.4	15.0	2	21.7
24	J. M. Allan									33 6	1	33.6
25	Landreth					31.6	39.9	32.0	25.6	4	32.2
26	Longberry									26.0	1	26.0
27	Martin's Amber					45.2	36.7	21.4	28.2	4	32.8
28	McQuay						39.1	19.2	14 7	3	24.3
29	Mediteranean		21.5	27.0		31.0	38.7	22 3	28.2	6	31.5
30	Miller's Prolific						38.2	16.5	16.0	3	23.5
31	Missouri Blue Stem								28.2	1	28.2

32	Michigan Amber		21.5	24.0		33.3	44.6		34.4	5	31 5
33	Nigger					36.6	51.0	24 6	32.0	4	38.0
34	New Monarch							36.1	27.7	2	31.9
35	No name								24.0	1	24 0
36	Ontario Wonder								25.6	1	25.6
37	Oregon								24.4	1	24 4
38	Odessa Red								22.3	1	22.3
39	Patagonian Trigo						46.3	27.3	14.9	3	29 5
40	Poole					32.6	61.2	25.5	17.5	4	34 2
41	Rocky Mountain				37.7				19.7	2	28.7
42	Red Fultz					38.2	54.0	35.2	30 9	4	39 5
43	Royal Australian					40.2	49.6	38.8	18.1	4	36 6
44	Red Brazilian								28.2	26.6	2	27.4
45	Red Line								31.6	27.7	2	29 6
46	Raub's Black Prolific								18.7	36.2	2	27.4
47	Reliable									28.5	1	28.5
48	Red Russian									19.1	1	19.1
49	Surprise						41.9	32.7	13.1	3	29.2
50	Silver Chaff (smooth)	33.0	26.0	28.5	39.0	39.7	45.2	30.0	31.4	8	34 1
51	Silver Chaff (bearded)							32.7	37.3	2	34.5
52	Sheriff								25.0	1	25 0
53	Sibley's New Golden								37.7	1	37.7
54	Seneca Chief								33.0	1	33.0
55	Tasmanian Red					49.6	45.6	22.1	25.0	4	35 5
56	Theiss		25.0	16.5		29.4	46.2	29.5	36.8	6	30.5
57	Tuscan Island						49.3	30.1	33.0	3	37.4
58	Valley					38.1	45.8	34.9	33.6	4	38.1
59	Velvet Chaff	28.0	22.5	27.0	35.2	33.3	42.9		26.6	7	30 7
60	Wyandotte Red						44.5	28.9	29.9	3	34.1
61	Witter							40.8	26.8	2	33.8
62	W. F. Morningstar								33.6	1	33.6

The experiment with wheat in 1885 was almost a total failure, owing to the severe winter, hence the results of that year's work do not appear in the tables.

Comparative Yield giving Average of Several Years.

Table II of this Bulletin gives the yields of all the varieties at present grown upon the large plats, also the number of years they have been grown, together with the average yield covering the number of years that each variety has been raised at the Station. This table, we think, is of greater importance and gives more definite information than Table I, from the fact that a variety of wheat may yield well for a year or two, or it may be more easily affected by drouth, by severe winters, by extreme heat, or by kinds or conditions of soil. But when a wheat yields a high rate per acre, for a number of years in succession, then it should be regarded among the more reliable varieties, and as worthy of trial. A careful perusal of Table II will develop to the reader any desired information respecting the best varieties as to productiveness when taken through a series of tests.

Thick and Thin Seeding.

Table III represents the continuation of the experiment of thick and thin seeding, which has been repeated upon the same ground for five years past. The treatment of the plats has been identical, all being plowed and harrowed at the same time, or upon the same dates. The same implements were used in tillage and in drilling. They were all drilled in on September 28th with Buckeye drill, no fertilizers nor manures of any kind being applied. Velvet Chaff was the variety of wheat sowed. The parts of these plots that were lodged were in a depression in which the surface soil has doubtless been collecting a little at a time from year to year, thus accumulating some of the richest portions of the plats.

Table IV shows averages of several years, as well as result of each successive year in thick and thin seeding. It will be noticed that the seven pecks per acre plat shows a slightly higher yield than any of the rest, yet the difference is only slight. The most surprising thing thus far developed in this experiment is that the three peck plat has given a yield, the average of which, for a period of seven years, is almost as high as the highest, and shows a better rate per acre than the plat which has had seed at the rate of eight pecks per acre. It would seem probable, judging from the results of these experiments, that the available plant food in the plat where the greater quantity of

seed was drilled has been largely withdrawn to provide for the greater growth of straw previous to the forming of the seed or berry, while in the plat where less seed was drilled the tillering would naturally tend to be multiplied and the plant food held more in reserve for the better development of the head and grain. Another point is that where the straw stands light upon the ground the ripening is usually a little later than where the straw stands more closely.

TABLE III—THICK AND THIN SEEDING OF WHEAT.

Plat number.	Quantity of seed sown, per acre.	Yield of grain, per acre.	Yield of straw, per acre.	Yield of straw, per 100 lbs. of grain.	Lodged.
		Bushels.			
1	Two pecks	14 9	1280	142.8	13 per cent.
2	Three pecks	43 2	3744	144 5	12 per cent.
3	Four pecks	40 5	3968	163.1	00 per cent
4	Five pecks	43.7	4352	165 4	00 per cent.
5	Six pecks	44 2	4192	157.9	00 per cent.
6	Four pecks	44 2	2976	112 0	00 per cent.
7	Seven pecks	48.4	5056	173.8	25 per cent.
8	Eight pecks	48.4	5120	176 0	14 per cent

TABLE IV—THICK AND THIN SEEDING OF WHEAT, COMPARISON OF SEVEN YEARS.

Plat number.	Quantity of seed sown, per acre.	Yield of grain per acre, bushels.							Number of years of trial.	Average for series of years.
		1878.	1879.	1883.	1884.	1886.	1887.	1888.		
1	Two pecks	.....	29.6	25.9	.....	42.6	36.9	14.9	5	29.9
2	Three pecks	32.2	30.5	36.1	35 6	43.0	39.3	43.2	7	37.1
3	Four pecks	.....	34.2	30.2	33.7	42.2	40.7	40.5	6	36.9
4	Five pecks	33.7	34.9	37.9	41.9	42.2	38.1	43.7	7	38.8
5	Six pecks	35.6	.....	29.6	37.6	38.9	40.7	44.2	6	37 7
6	Seven pecks	37.5	35.9	37.3	39.8	37.0	43.8	48.4	7	39.9
7	Eight pecks	37 5	.....	25.6	38.0	28.6	40.5	48.4	6	36.4
8	Nine pecks	31.5	34.2	33.9	37.0	.....	.....	.....	4	34.1

Early and Late Seeding.

The question of early and late seeding is one of vital importance, and one upon which there is a wide diversity of opinions. We venture to say, however, that the variation of seasons has more to do with results than the time of seeding. In the past year the several plats have been given the same treatment. They have been plowed, harrowed, rolled and drilled upon the same day. This we do not think the most advisable method, because it does not give the proper preparation of the seed bed, from the fact that cultivation alone is not all that is required, but Nature's workings upon the soil are also essential to its thorough preparation to receive the seed. Carefully prepared notes, during the fall, after seeding, are not at hand, hence we must leave the reader to study Table IV, and draw his own conclusions. In connection with this we will add Table V, giving the averages of early and late seeding, covering a series of years, which will give a more conclusive answer to the question, "When shall I sow my wheat?"

TABLE IV—EARLV AND LATE SEEDING OF WIIEAT.

Number of plat.	Time of seeding.	Quantity of grain, per acre.	Amount of straw, per acre.	Amount of straw per 100 lbs. of grain.
1	August 23rd	12.8	1536	200.0
2	August 30th	11.2	1632	242.8
3	September 6th	12.1	1120	145.8
4	September 13th	26.6	2880	180.0
5	September 20th	26.6	2752	172.0
6	September 27th	26.1	2336	155.3
7	October 4th	28.2	2336	137.7
8	October 11th	33.0	3200	161.2
9	October 18th	20.8	1952	156.2
10	October 25th	27.7	1984	119.2
11	November 1st	22.9	2744	199.4

FALL DROUTH.—The very dry weather during August and the early part of September, 1887, doubtless had its serious effects upon the three plats sowed previous to the 6th of September.

TABLE V.—EARLY AND LATE SEEDING OF WHEAT—SERIES OF TRIALS.

1883.		1884.		1886.		1887.		1888.		
Date seeded.	Yield, per acre.	Date seeded.	Yield, per acre.	Date seeded.	Yield, per acre.	Date seeded.	Yield, per acre.	Date seeded.	Yield, per acre.	Average yield.
August 25	24.1	August 25	35.8	August 29	41.2	August 23	31.7	August 23	12.8	29.1
September 1	40.0	September 1	51.8	.....	.....	August 30	31.6	August 30	11.2	33.8
September 8	34.9	September 8	55.6	September 10	32.3	September 6	28.3	September 6	12.1	32.6
September 15	42.4	September 15	57.2	September 17	35.0	September 13	31.3	September 13	26.6	38.5
September 22	36.9	September 22	53.2	September 24	38.6	September 20	27.8	September 20	26.6	36.6
September 29	47.1	September 29	54.6	October 1	42.1	September 27	26 1	September 27	26.1	39.2
October 6	34 7	October 6	56.9	October 8	36.5	October 4	32.7	October 4	28.2	37.8
October 13	38.0	October 13	44.4	October 15	38.0	October 11	30.6	October 11	33.0	36.8
.....	.....	October 20	43.6	October 22	29.9	October 18	20.9	October 18th	20.8	28.8
.....	.....	October 27	35.6	.....	.....	October 25	18.9	October 25	27.7	23.3
.....	.....	.....	.....	.....	.....	November 1	7.4	November 1	22.9	15.1

Seeding at different Depths.

This is the third year that the Station has conducted an experiment in different depths of placing the seed. The limits of planting or drilling ran from one up to five inches in depth and the results show but slight differences in yields. So slight, indeed, that we do not deem the table of results of sufficient interest to warrant us in occupying space in this Bulletin to give them publicity, but we will publish them in our annual report. We may say, however, that upon the plat in which the seed was drilled five inches deep, there was a noticeable falling off in yield, but the quantity of straw was proportionally more reduced than the amount of grain. But from one and one-half inches in depth up to four inches the variation is exceedingly slight.

Methods of Culture.

Under this head we have different methods of seeding in connection with the methods of culture. The wheat sowed upon these plats was the same variety, the Velvet Chaff. The previous treatment of the several plats was as nearly identical as it was possible to have them. The difference in seeding methods was produced simply by the various patent attachments, the ordinary Buckeye grain drill being used with the shoe attachment, the shoe followed by press wheels, one after each shoe, and the ordinary hoe followed by press wheels.

The *Lois Weeden* method consists primarily in allowing the ground to lie fallow each alternate year, and cultivating the land so as to keep the weeds from growing.

The broadcast seeding was done by hand and harrowed in with spike harrow at the same rate per acre as the balance was drilled, viz., five pecks per acre.

Velvet Chaff wheat was used, and it was drilled about the 29th of September. The compacting of the soil was done by continuous rolling with a wooden roller. The light mulch was put on from three to four inches thick, and the table gives evidence of its being injurious rather than beneficial. The mulch in the second plat was quite too heavy, being from eight to ten inches thick. It resulted in an entire failure, not a single head reaching maturity, and scarcely a sprout of wheat was to be seen to mark the place of the plat. The plats mulched were subject to a western exposure, but sloped sufficiently to carry off all surface water. Table VI, which follows, will show the results.

TABLE VI—METHODS OF CULTURE.

Plat number.	Methods of seeding.	Yield of grain, per acre.	Weight of measured bushels.	Weight of straw, per acre.	Weight of straw to 100 lbs. of grain.	Lodged.
58	Lois Weedon culture	37.3		3968	177.1	Erect.
81	Shoe drill	45.3		4512	165.8	10 per cent.
82	Shoe drill, wheel press	50.6		4704	154.7	23 per cent.
83	Hoe drill, roller press	48.0		5056	175.5	38 per cent.
84	Broadcast, by hand	35.7		3872	180.5	43 per cent.
93	Light mulch, 3–4 inches	26.1		2272	144.9	Erect.
94	Heavy mulch, 8–10 inches	Failure.	Failure.	Failure.	Failure.	Failure.

SUMMARY.

Varieties.—The Hungarian, Egyptian, Theiss, Tuscan Island, Valley and Nigger, among the red bearded wheats, are recommended as worthy of trial; of the smooth red wheats, the German Emperor, French Prairie, Michigan Amber and Wyandotte Red; of white wheats, the Martin's Amber, Democrat and Silver Chaff (smooth.)

Quantity.—While the thick and thin seeding shows good results in favor of light seeding, we do not recommend for general practice less than five pecks, nor more than seven.

Time of seeding.—South of the 41st parallel we believe that wheat should be sowed after the 10th of September, but the northern section will bear earlier sowing.

Depth of seeding.—So far as tested, the depth of seeding within reasonable limits does not effect the yield.

Winter protection.—The experiments made here in the way of mulching do not justify us in even venturing an opinion until we have given it a further trial.

Preparation.—Thorough preparation of the seed bed is one of the great essentials toward securing a good crop. Plow early, stir the ground thoroughly and often, make the surface smooth and level, so that water will not stand in low places, then put the wheat in when the ground is in good friable condition, not too wet, and nature will finish the work without further aid.

In conclusion we may say that the varieties of wheat have been given considerable study with a view of detecting synonyms, but as yet we are not justified in publishing our work.

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